

## C3 Using VSEPR Theory to Predict Molecular Shape

Note: This is an expansion of the table found on page 245 of the text.

**Table 1** Using VSEPR Theory to Predict Molecular Shape

General formula*	Bond pairs	Lone pairs	Total pairs	Molecular shape		Examples
				Geometry**	Shape diagram	
AX <sub>2</sub> E	2	1	3	V-shaped (trigonal planar)		SnCl <sub>2</sub>
AX <sub>5</sub>	5	0	5	trigonal bipyramidal (trigonal bipyramidal)		SbCl <sub>5</sub>
AX <sub>4</sub> E	4	1	5	seesaw (trigonal bipyramidal)		SF <sub>4</sub>
AX <sub>3</sub> E <sub>2</sub>	3	2	5	T-shaped (trigonal bipyramidal)		BrF <sub>3</sub>
AX <sub>2</sub> E <sub>3</sub>	2	3	5	linear (trigonal bipyramidal)		XeF <sub>2</sub>
AX <sub>6</sub>	6	0	6	octahedral (octahedral)		SF <sub>6</sub>
AX <sub>5</sub> E	5	1	6	square pyramidal (octahedral)		BrF <sub>25</sub>
AX <sub>4</sub> E <sub>2</sub>	4	2	6	square planar (octahedral)		XeF <sub>4</sub>

\* A is the central atom; X is another atom; E is a lone pair of electrons.

\*\* Electron-pair arrangement is in parentheses.